

The Wood-inhabiting Fungus, *Aleurodiscus dendroideus*, sp. nov., and the Distinctions Between *A. grantii* and *A. amorphus*

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GINNS, J. 1982. The wood-inhabiting fungus, *Aleurodiscus dendroideus* sp. nov., and the distinctions between *A. grantii* and *A. Amorphus*. Canadian Field-Naturalist 96(2): 131-138.

The wood-inhabiting fungus, *Aleurodiscus dendroideus*, sp. nov., from Alberta is characterized by its small, pezizoid basidiomes, smooth, amyloid spores, botryose acanthophyses, apically moniliform pseudocystidia and clamp connections. *Aleurodiscus grantii*, formerly considered to be a synonym of *A. amorphus*, is recognized as a distinct species based on microscopic features and restricted geographic distribution.

Key Words: Wood-inhabiting fungi, taxonomy, *Aleurodiscus* species, distribution, habitats.

During the study of wood-inhabiting fungi of the western cordillera of North America, three distinct species were recognized among specimens closely resembling *Aleurodiscus amorphus* (Purton) Schroet. A collection from Alberta is proposed as a new species (*A. dendroideus*). Also, *A. grantii* is recognized as a distinct species rather than as a synonym of *A. amorphus*. The three species are described and the distinguishing features of the three are discussed.

Methods

Macroscopic features were taken from dried specimens unless otherwise specified. Color codes are from Munsell (1942). Most details of the microanatomy were obtained from thin (ca 10 μ m), vertical sections of basidiomes (=fruiting bodies). Sections were mounted in several standard mycological reagents (2% W/V aqueous KOH, Melzer's reagent, sulfobenzaldehyde and cotton blue). The reagents were prepared according to the directions in Singer (1975, p. 92-100). Terms describing hyphal wall thicknesses follow the definitions in Ginns (1976, p. 107). The listings of Specimens Examined includes at the end of each entry the code letters of the herbarium where that specimen is housed. Details of the location of these herbaria are included in the Acknowledgments.

Descriptions

Aleurodiscus dendroideus Ginns, sp. nov.

Basidiocarpae usque ad 1.5 mm diam. Hyphae hyalinae, fibulatae, Acanthophysae botryosae. Basidiosporae ovoidae, laeves, amyloideae, (14.5-)16-18.5 X 9.5-11 μ m.

Holotypus: Canada: Alberta: SW of High Level, 3 September 1964, on *Picea glauca*, Gautreau (CFB 6329).

Etymology: from the tree-like branching habit of the acanthophyses.

Basidiomes (Figure 1 A-B) pezizaeform, up to 1.5 mm diam, sessile, attached by a central, white radicating base up to 0.5 mm diam; exterior white, granulose to a rather matted cottony; margin white, determinate, of fine granulose-appearing hairs (=acanthophyses) that extend slightly over the edges of the hymenial surface; hymenial surface pale yellow to yellow, finely granulose, smooth, slightly convex; context pure white.

Hyphal system monomitic; context hyphae closely packed, parallel, essentially vertically arranged, distinct, rather frequently branched, hyaline, thin-walled, with clamp connections and infrequent simple septa, 4-5 μ m diam, nonamyloid, acyanophilous; acanthophyses (Figure 1 E-F) numerous, on the exterior of the basidiome and in the hymenium, they are responsible for the granulose texture of the basidiome, composed of a cylindrical, thin-walled pedicel 4-5 μ m diam with a weakly amyloid, dendroid head 20-30 μ m wide and up to 60 μ m tall, occasionally the apex of the pedicel becomes inflated up to 12 μ m diam; pseudocystidia (Figure 1 C) uncommon to rare, narrowly clavate, occasionally cylindrical, nonamyloid, the color and texture of the contents similar (i.e., not granulose or oily) to the basidia but staining blackish grey in sulfobenzaldehyde, up to 8.5 μ m diam, with or without one to four successively smaller, acropetal, apical swellings; hyphidia rather frequent, cylindrical to narrowly clavate, typically slightly wavy, thin-walled, nonamyloid, 4-5 μ m diam, with an obtusely rounded apex: basidia (Figure 2) narrowly clavate, 140-150 X 12-13 μ m, tapering to an essentially cylindrical base 4 μ m diam, with four sterigmata, each up to 8-11 μ m long; spores (Figure 1D) ovoid in face view, ovoid to broadly ellipsoid in profile, adaxially sometimes slightly flattened, (14.5-)16-18.5 X 9.5-11 μ m, with a broad, blunt apiculus; the wall smooth, thin, hyaline, amyloid.

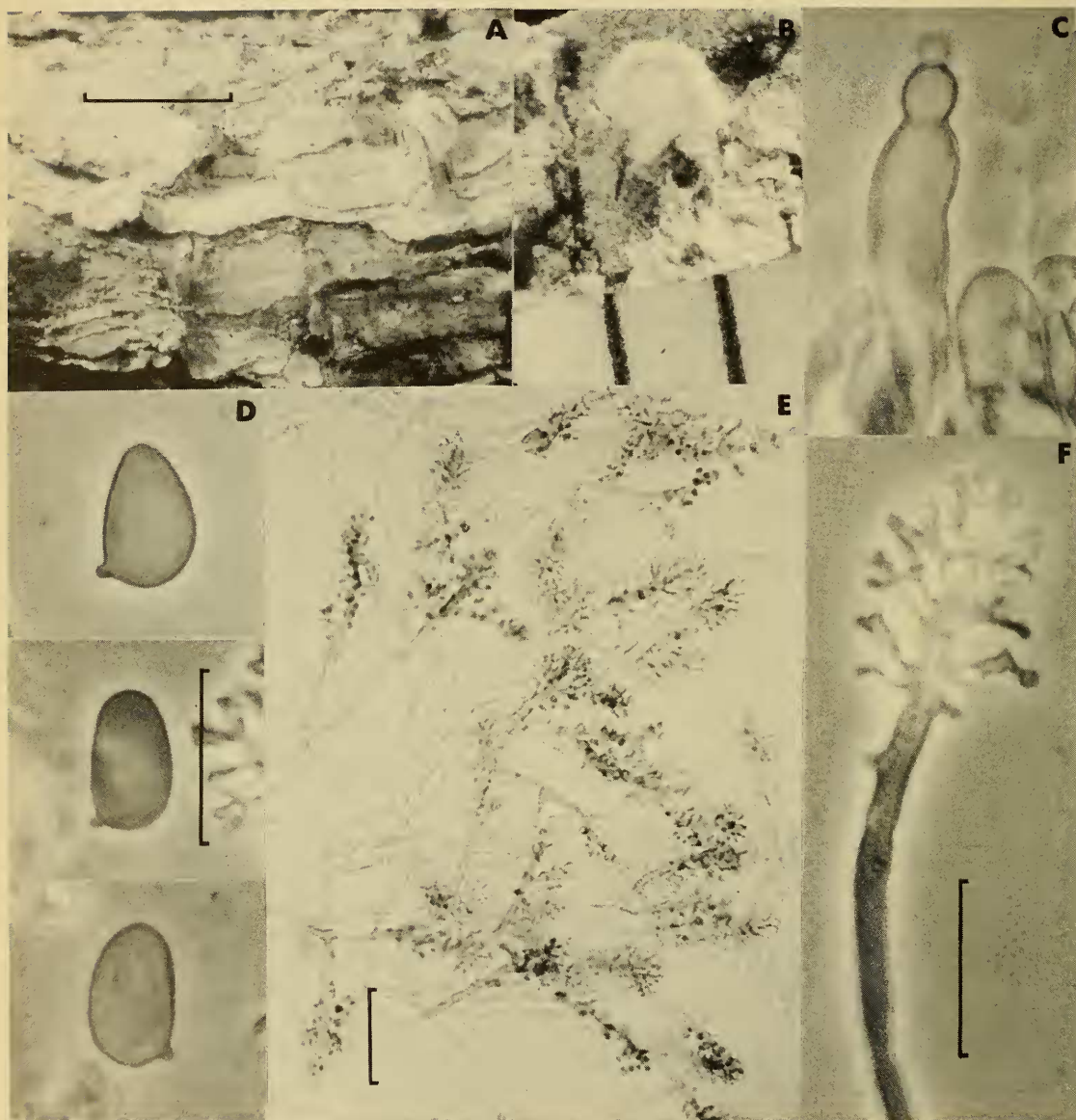


FIGURE 1. *Aleurodiscus dendroideus*. A-B. Basidiomes. C. Pseudocystidium. D. Spores. E-F. Acanthophyses. All from holotype. Scale equals in A 2 mm, B 1 mm, C, D & F 20 μ m, and E 50 μ m.

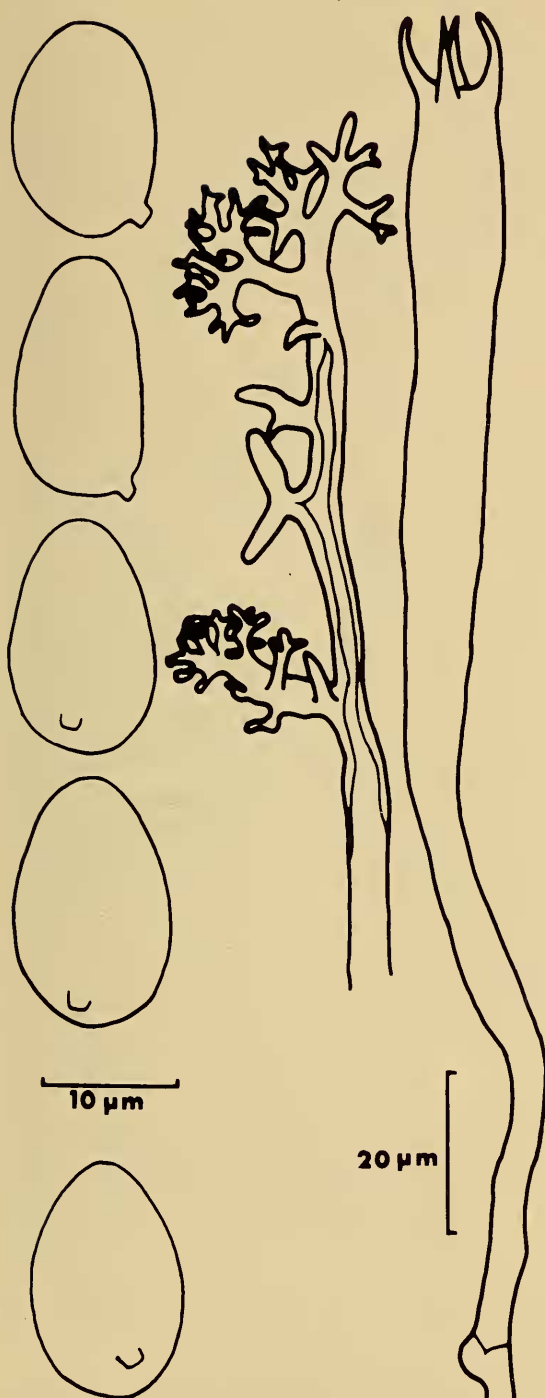


FIGURE 2. *Aleurodiscus dendroideus*. Five basidiospores, the terminal segment of a sparsely branched acanthophyllum and a basidium. From holotype.

Habitat

The basidiomes were emerging either between or from somewhat under bark scales on the sides and lower surface of a 7 mm diameter branch of *Picea glauca*. It is not known whether the branch was on the ground, on a dead tree or a dead branch on a live tree. The latter is a preferred habitat for some species (e.g., *Aleurodiscus amorphus*).

Aleurodiscus grantii Lloyd (1920, p. 927).

Basidiomes disciform or pezizaeform, 1-4 mm diam (resembling Figure 5), scattered to gregarious, sometimes confluent, in vertical section 0.5-1 mm thick, attached by a short, central base; margin determinate, ringed with white, shiny fascicles of hyphal hairs, up to 0.2 mm long; hymenial surface plane to slightly convex, finely granulose, typically pale orange pink to pink (Munsell 2.5YR7/6), sometimes faded when aged or after storage; abhymenial surface white, grey or pale brown, finely hirsute or matted.

Hyphal system monomitic; generative hyphae in the context hyaline, thin- to sometimes rather thin-walled, the wall often with a $1.5\ \mu\text{m}$ thick gelatinized exterior as viewed in 2% KOH, branched, some septa with clamp connections (Figure 3 B), 3-5(-6.5) μm diam; abhymenial surface sometimes with hyphae parallel, compact, rather thin- to thick-walled, brownish yellow, to $7\ \mu\text{m}$ diam; hyphal "hairs" on the abhymenial surface of the basidiomes and the margin around the hymenial surface straight, rarely branched, branches arising dicotomously, simple septate, thin- to rather thin-walled, 3-5(-6) μm diam; hymenium, syb hymenium and adjacent context with few to numerous, square to angular crystals up to $10\ \mu\text{m}$ wide; pseudocystidia lacking; hyphidia (Figure 3 C) hyaline, thin- to rather thin-walled, infrequently thick-walled, straight to wavy, unbranched or with up to four short branches, cylindrical or with the apex irregularly swollen or strangled, swellings sometimes moniliform, 4-6 μm diam; basidia clavate, tapering to a $4\ \mu\text{m}$ diam base, with a clamp connection around the basal septum, $\pm 230 \times 25\text{-}28\ \mu\text{m}$ with four sterigmata, each up to $21\ \mu\text{m}$ long; spores (Figure 3 A) broadly ellipsoid to subglobose, $22\text{-}32\text{(-}39) \times 18\text{-}24$ (-28) μm , the wall to $1\ \mu\text{m}$ thick, hyaline, acyanophilous, with amyloid spines up to $4\ \mu\text{m}$ long, with a broad (-3 μm), blunt apiculus.

Habitat

Typically occurring on the lower surface of small (1-6 cm diam), dead branches in the lower crown of live coniferous trees, sometimes on the trunks of dead saplings or on fallen stems. It is most frequently collected on species of *Abies*, especially *A. grandis* and *A. lasiocarpa*, and less frequently on other tree species (cited in Specimens Examined section).

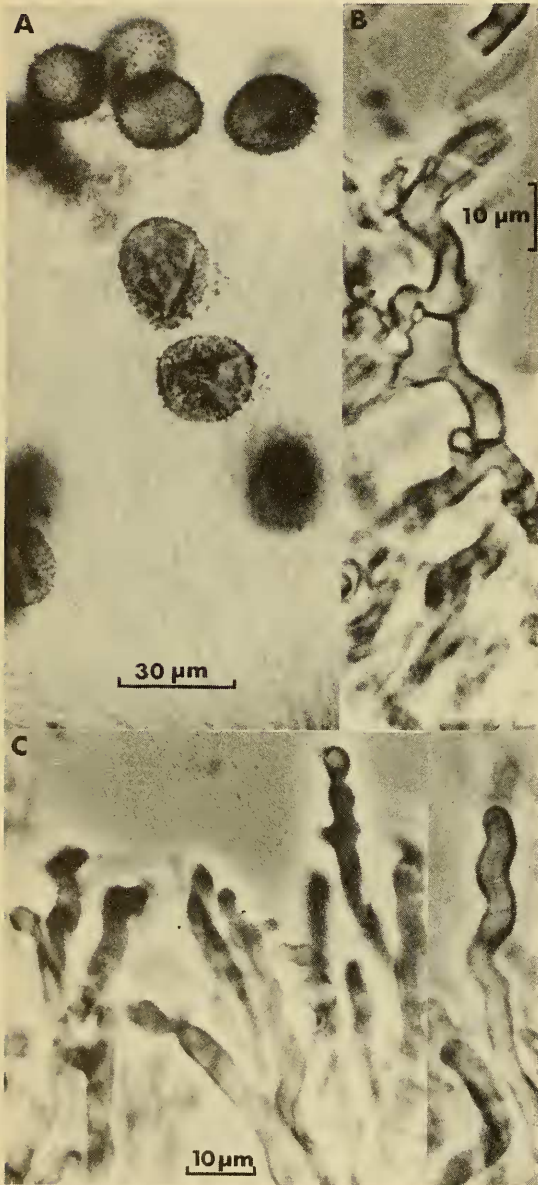


FIGURE 3. *Aleurodiscus grantii*. A. Basidiospores with amyloid spines. B. Clamp connection across a septum of a hypha. C. Narrow hyphidia. From isotype of *A. grantii* (TRTC).

Distribution

In western North America from 113°W longitude extending west to the Pacific Ocean and from 38° to 64° N latitude (Figure 4). More specially in the cordillera from Yukon, British Columbia, western Alberta,

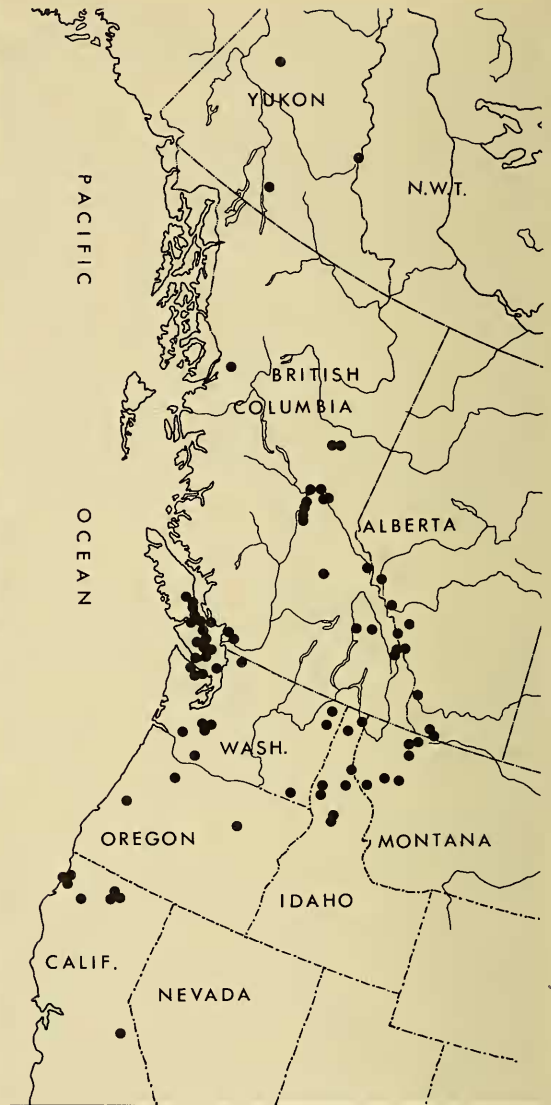


FIGURE 4. Known distribution of *Aleurodiscus grantii*. In some instances one dot was used to represent several collections from the same locality, especially on Vancouver Island, British Columbia.

western Montana, Idaho, Washington, Oregon and northern California.

Specimens examined (selected)

Canada. Yukon: Barlow Dome, on *Abies lasiocarpa*, Ginns & Cody (DAOM 177674), South Canol Road km 8, Ginns & Cody (DAOM 177430), Howard Pass, Rosie 19 (DAOM 175699). Alberta: Waterton

Lakes National Park: Cameron Lake, on *A. lasiocarpa*, Etheridge (CFB 3332), 4 km NE of junction of Johnson Creek Road and Kananaskis-Coleman Road, on *Picea* sp., Anderson 17-I-B2 (DAOM 147223). British Columbia: Vancouver Island: Forbidden Plateau, on *A. amabilis*, Ziller (DAVFP 16894), VI: Qualicum, on *A. grandis*, Mounce (DAOM F8966), VI: Victoria: Millstream Road, on *A. grandis*, Ginns (DAOM 177428), Victoria: Gordon Head, on *A. pinsapo*, Buckland, V2830 (DAOM 52659), Garibaldi Park: Black Tusk Meadows, on *Tsuga mertensiana*, Touzeau & Mounce (DAOM F8986), Prince George, on *A. lasiocarpa*, Salisbury, V4013 (DAOM 17004). U.S.A. California: Tuolumne Co.: 3.2 km N of Pinecrest in Sierra Nevada Mts., on *A. grandis*, Quick 51ah (WSP 39711), Siskiyou Co.: Mt. Shasta: Wagon Camp, on *A. concolor*, Cooke 37304 (DAOM 100669 & WSP), Mt. Trinity Co.: South Fork, on *A. magnifica* (as *A. shastensis*), Parks 7076 (TRTC), Humboldt Co.: Trinidad: Spruce Cove, on *Picea sitchensis*, Parks 6936 (TRTC & WSP 41587), on *Pinus muricata*, Parks 6503 (TRTC), on *Pseudotsuga menziesii*, Parks 6989 (TRTC). Oregon: Union Co.: Umatilla Nat. For.: Blue Mts., on *A. lasiocarpa*, Cooke 23913 (TRTC). Idaho: Idaho Co.: Mt. Idaho, on *A. grandis*, Cooke 23782 (TRTC), St. Joe Nat. For.: Wards Peak, on *A. lasiocarpa*, Weir 16784 (TRTC). Montana: Flathead L., on *A. grandis*, Gilbertson 4933 (DAOM 99780), Glacier Nat. Park: Sperry Chalet area, on *A. lasiocarpa*, Cooke 32228 (WSP 63286). Washington: Mt. Rainier Nat. Park, on *A. amabilis*, Wright & Rhoads (WSP 30933), on *A. lasiocarpa*, Imshaug 311 (DAOM 24399 & TRTC), Pend d'Oreil, on *A. concolor*, Leibig in Ellis & Ev., N. Am. Fungi, 2nd ser., 2733 (DAOM), Stevens Co.: 1.6 km S of Springdale, on *A. grandis*, Cooke 19101 in Cooke, Mycobiota N. Am. 236 (DAOM), Mt. Baker Nat. For.: Whatcom Co.: Tomyhoi L. trail, on *Picea* sp., Brodo 13056H(2) (DAOM 138596), Olympic Nat. Park: Hurricane Trail, on *Pseudotsuga menziesii*, Cooke 27416 (WSP), Island Co.: Whidbey I.: Oak Harbor, on *Tsuga heterophylla*, Harrison 37 (TRTC), and locality and host unknown, Grant 970 (BPI: Lloyd herb. 34000, designated lectotype by Lemke (1964, p. 231) and part at TRTC).

Aleurodiscus amorphus (Purton) Schroet. in Cohn, Krypto.

Fl. Schles. 3(1): 429. 1889.

= *Peziza amorphia* Purton, App. Midl. Fl. p. 265. 1821.

= *Nodularia balsamicola* Peck, N.Y. State Museum Rept. 24: 96. 1872.

Basidiomes (Figure 5) disciform or pezizaeform, 1-5 mm diam, typically circular in outline, scattered to



FIGURE 5. *Aleurodiscus amorphus*. Fresh basidiome with tetrads of basidiospores visible on the hymenial surface. From DAOM 177755.

gregarious, sometimes confluent and then of irregular outline, attached by a short, central base, up to 0.5 X 0.5 mm which expanded to 1 mm diam beneath the outer cortex layer of the host; margin determinate, ringed with white hairs, cottony to fimbriate, sometimes fasciculate and then appearing hirsute, up to 1 mm long; hymenial surface plane to slightly convex, finely granulose, when fresh and actively sporulating salmon pink (Munsell 10R6/8 or 2.5YR7/8), in aging or after herbarium storage pallid (2.5Y8/4), pinkish orange (5YR7/6) or olive ochraceous (2.5Y7/4, 10YR6/4); abhymenial surface white, grey, balckish grey or pale brown, matted tomentose to finely hirsute.

Hyphal system monomitic; generative hyphae in the context hyaline, simple-septate, thin- to rather thin-walled, the exterior surface of the walls swelling in 2% KOH, with few to numerous segments crystalline incrustated, branched, nonamyloid, acyanophilous, 3-5 μ m diam; external hyphae, including those form-

ing the "hairs" around the hymenial surface and those of the abhymenial surface, hyaline, pale yellow or some on the abhymenial surface yellow-brown, thin- to rather thin-walled, septate, rarely branched, the branches arising as an apical dicotomy, incrustated with few to numerous small ($-5\ \mu\text{m}$), roughed or angular crystals, (3-)4-6.5 μm diam; hymenium and context with few to numerous, small to large ($-10\ \mu\text{m}$ diam) crystals scattered throughout; hyphidia (Figures 6A & D) scattered, cylindrical or some irregularly swollen, straight to wavy, some with one or two branches, (2-)3-5 μm diam; pseudocystidia (Figure 6B) usually numerous, typically with 1 to several, successively smaller, acropetal, apical swellings up to 10-11 μm diam, acyanophilous, nonamyloid, not darkening in sulfobenzaldehyde; basidia (Figure 6C) clavate, tapering to a narrow (4-5 μm diam) base, basal septum simple, about 200 X 22-28 μm with four sterigmata, each 30-40 μm long and up to 7.5 μm broad at the base; spores broadly ellipsoid to subglobose, (22-)24-

28(-32) X (18-)20-23(-26) μm , the wall either hyaline and thin or thickened and pale yellow, acyanophilous, with amyloid spines up to 4 μm long and a broad, blunt apiculus.

Habitat

Occurring on the lower surface of dead branches in the lower crown of live conifers, especially species of *Abies*, also on fallen branches and stems. Persisting for several months, perhaps as long as one year. Erumpent through the bark but not distorting the substrate (i.e., not causing or associated with a canker).

Distribution

Across North America where species of *Abies* occur but not confined to *Abies*. Rare to uncommon within the range of *Aleurodiscus grantii* (Figure 4). Found in Europe, Siberia, Japan (Lemke 1964) and China (Lemke 1964).

Specimens examined

Europe. France: Aude, near LeClat, 1333 m, on *Abies alba*, Fenwick-Owen and Darker 3970 (DAOM 127127). Sweden: Ostrog, in monte Omberg, on *A. alba*, Schotte (DAOM 72058), Switzerland: St. Cergue, on *A. alba*, Darker 4029 (DAOM 72424).

Canada (host is *A. balsamea* unless specified). Nova Scotia: Kentville, Harrison 96 (DAOM 95381). New Brunswick: Fundy National Park, Cain (TRTC 41581). Quebec: Parc Chibougamau: Lac Nicabau, on dead branches on live tree, Ginns (DAOM 175406); Upper Lachute, on *Pinus strobus*, Gordon 1285 (DAOM, Dearness species no. 475); Gatineau Co.: Cantley, Ginns (DAOM 177755). Ontario: Matachewan: SW of Burt Lake, on log, Ginns (DAOM 175409); Nipigon: Black Sturgeon Lake, Ginns (DAOM 175408); Algoma District: Township 4F: Aubinadong River, Cain (TRTC 34038, DAOM); Kenora, Buller (DAOM F6699). Manitoba: Victoria Beach, Bisby (DAOM 33925); Island Lake, Tidsbury, WINF 7715 (CFB); Snow Lake, Tidsbury, WINF 9973A (CFB); Portage: Cranberry, Lawrence, WINF 10875 (CFB). Saskatchewan: La Ronge, Beveridge, WINF 8273b (CFB); White Swan Lake, Lawrence, WINF 7641 (CFB); Doré Lake, Riley 48-35 (DAOM 30459). Alberta: Seebe, on *A. lasiocarpa*, Whitney & Riley 50-15 (DAOM 30903) and on *Picea glauca*, Riley 794 (CFB); Kananaskis, on slash of *P. glauca*, Riley & Patterson 49-567 (DAOM 30904); Robb (42 km SE of Hinton), Baranyay (CFB 4283); Nordegg, on *A. lasiocarpa*, Etheridge (CFB 1164 and 1300); Waskahigan River, on *P. glauca*, Laut (CFB 3651). Yukon: South Canol Road km 15, on dead *A. lasiocarpa*, Ginns (DAOM 178788) and km 84, Quiet

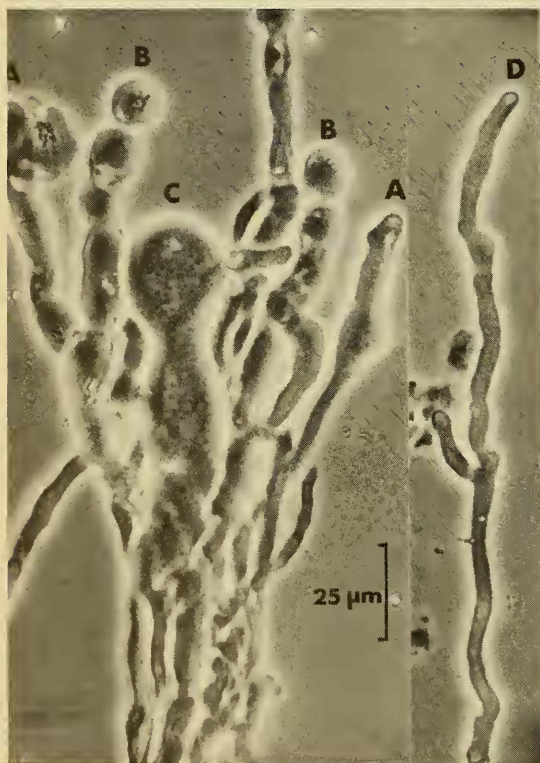


FIGURE 6. *Aleurodiscus amorphus*. A. Broad, cylindrical to irregularly swollen hyphidia. B. Broad, moniliform pseudocystidia. C. Immature basidium. D. Narrow hyphidium. From lectotype of *Nodularia balsamicola* (NYS), a synonym of *A. amorphus*.

Lake, on dead branches of live *A. lasiocarpa*, Ginns & Cody (DAOM 177429). British Columbia: Highway 97 km 600, on *A. lasiocarpa*, Ginns (DAOM 178789).

USA. New York: Indian Lake, Peck (NYS, lecto-type of *Nodularia balsamicola*); Stamford, on *Picea* sp., ? Burnham 58 (BPI, Lloyd Herb. 33999). Minnesota: Lake Itasca, on *A. balsamea*, Christensen & Ehrlich 2205 (TRTC). Oregon: Taft, on *Picea sitchensis*, Goodding (TRTC). Arizona: Cochise Co.: Coronado National Forest, on *A. concolor*, Gilbertson 8242 (DAOM 178662) and Lindsay 412 (DAOM 178663).

Mexico. Mt. Popocatepetl (72 km SE of Mexico City), on *A. religiosa*, Lemke (TRTC 37150 and 37102).

USSR. Siberia: District Jara, on *A. sibirica*, Murashkinsky (TRTC).

Discussion

Macroscopically the basidiomes (Figure 1 A-B) of *Aleurodiscus dendroideus* closely resembled apothecia of species of Helotiaceae. The combination of features that distinguishes *A. dendroideus* from the other species of *Aleurodiscus* are the pezizaeform basidiomes, clamp connections, botryose acanthophyses, pseudocystidia and smooth, ovoid spores (Figure 1).

Several microscopic features of *A. dendroideus* warrant particular mention. In the hymenium the individual cells (i.e., basidia, acanthophyses, etc.) had arisen at the same level and were approximately the same length, thus the hymenium seems to be of the euhymenial type. Some pseudocystidia lack apical swellings and are thus indistinguishable from immature basidia when observed in Melzer's, KOH or cotton blue reagents, but in sulfobenzaldehyde they stain blackish grey unlike the basidia. The botryose acanthophyses are unusual in *Aleurodiscus*. The only other species with extensively branched acanthophyses are *A. botryosus* Burt and *A. peteloti* Pat. *Aleurodiscus botryosus* has narrower and more densely packed branches on the acanthophyses, corticioid basidiomes, apically attenuated pseudocystidia, simple septa, echinulate spores and short ($-68\ \mu\text{m}$) basidia (Lemke 1964). *Aleurodiscus peteloti* has a pale reddish hymenium, asperulate spores $23-25 \times 14-15\ \mu\text{m}$ and is known only from Viet Nam (Patouillard 1924).

Aleurodiscus grantii was placed in synonymy with *A. amorphus* by Rogers and Jackson (1943, p. 269) following their examination of the three specimens upon which Lloyd (1920) based his new species. This synonymy was reaffirmed by Lemke (1964, p. 227). He too examined Lloyd's specimens. As a result all collections with discoid- or pezizoid-like basidiomes with large, spiny, amyloid spores have been labelled *A.*

amorphus. However, there are sufficient distinguishing characters of taxonomic importance to recognize *A. grantii* as a species distinct from *A. amorphus*.

The principal character distinguishing *A. grantii* from *A. amorphus* is the presence of clamp connections in *A. grantii* (Figure 3 B). Clamps were found at about 10% of the septa on the context hyphae. In specimen DAOM F8966 clamps were unusually frequent, i.e., at 30-40% of the septa. A clamp was present at the base of nearly all mature basidia. *Aleurodiscus amorphus* lacks clamps (Lemke 1964; Eriksson and Ryvarden 1973, p. 63). In addition *A. amorphus* has slightly smaller spores, broad ($8-12\ \mu\text{m}$ diam), apically moniliform pseudocystidia (Figure 6B), and apparently is of wider geographical distribution. The differences in spore sizes may not be obvious when the size ranges in the descriptions are compared but by measuring the largest spores in each collection it became evident that *A. grantii* typically has spores $30\ \mu\text{m}$ or longer whereas in *A. amorphus* it was unusual to find spores over $28\ \mu\text{m}$ long.

The two species produce cylindrical hyphidia (Figure 3 C & 6 D). In *A. grantii* some hyphidia in some specimens have the apical portion strangulated to form irregular to moniliform swellings. These strangulated hyphidia resemble the pseudocystidia of *A. amorphus*, but never produce swellings which are as uniformly globose or as broad ($-11\ \mu\text{m}$ diam) as those in *A. amorphus*. In both species the size and number of crystals in the hymenium and context varied between specimens, and both species had hyphal walls swelling in 2% KOH.

Lloyd (1920) in distinguishing *A. grantii* from *A. amorphus* emphasized macroscopic features which, to me, are not important in separating the two species, i.e., the "free but not raised margin" and basidiomes "entirely different in shape" in *A. grantii*. He continued, "microscopic characters as in *A. amorphus*." As noted above the microscopic features are of primary importance in separating the species.

Aleurodiscus amorphus is redescribed, and host and geographic records are given. All are based on specimens examined by me, unless otherwise specified. The description of *A. amorphus* gives my circumscription of the species and allows comparison with the features of *A. grantii*. There are few and only minor differences between the description herein and the one presented by Lemke (1964), where *A. grantii* was accepted as a synonym of *A. amorphus*. The above description extends the abhymenial color from white to include grey, blackish grey and pale brown, notes the swelling of hyphal walls in 2% KOH and the size of the sterigmata to be twice that given by Lemke.

The segregation of *A. grantii* from *A. amorphus* necessitates a critique of the hosts and geographic

distribution that have been reported for *A. amorphus* in western North America where both species occur. Despite the examination of nearly 130 specimens labelled *A. amorphus* from western North America only 13 proved to be *A. amorphus*, the remainder were redetermined as *A. grantii*. Therefore the records of *A. amorphus* from British Columbia (Connors 1967) and on *Picea* from Idaho, California and Colorado (Martin and Gilbertson 1977) probably were based on specimens of *A. grantii*. The record (Connors 1967, p. 5) of *A. amorphus* in British Columbia on *Abies pinsapo* was based on a specimen (cited above) of *Aleurodiscus grantii*. Although *A. amorphus* occurs in the cordilleran on *Abies concolor*, *A. lasiocarpa*, *A. religiosa*, *Picea glauca* and *P. sitchensis* no specimens of *Aleurodiscus amorphus* were seen from British Columbia. The numerous specimens in DAOM from Canada east of Alberta were with few exceptions on *Abies balsamea*, whereas *Aleurodiscus grantii* is not known from *Abies balsamea*.

The northern and southern limits of *Aleurodiscus grantii* and the degree to which its range overlaps the range of *A. amorphus* remain to be defined. The ranges of the two species are known to overlap at two points: in central Yukon and the Alberta foothills. A lone collection of *A. amorphus* was seen from coastal Oregon, the heart of the range of *A. grantii*. Confirmation that the Oregon specimen was from the coast as indicated by the specimen label was supplied by Dr. I. Brodo of Ottawa who examined the lichens growing on the branch adjacent to the basidiomes of *A. amorphus*. Two of the lichens are known only from the Pacific coastal region of North America. Although Cooke (1955, p. 13) reported *A. amorphus* from Alaska, the specimen (Sprague 165 at WSP) which was the basis of his report is, to me, *Aleurocystidium subcruentatum* (B. et C.) Lemke. No other records or specimens of either *Aleurodiscus amorphus* or *A. grantii* have been seen from Alaska. To the west of Alaska only one specimen was seen from Siberia and it was *A. amorphus*. Parmasto (1963) recorded *A. amorphus* on *Abies gracilis* from Zhupanova, Kamchatka.

The close relationship of *Aleurodiscus grantii* and *A. amorphus* is emphasized by the presence of the mycoparasite *Tremella mycophaga* Martin, on *A. grantii* (e.g., DAOM 139346). Previously *T. mycophaga* was known only from *A. amorphus*.

Acknowledgments

The cooperation of the curators at several herbaria is sincerely appreciated: University of Arizona Herbarium, Tucson (ARIZ), National Fungus Collections, Agricultural Research Center, Beltsville, Maryland (BPI), Northern Forest Research Centre, Edmonton, Alberta (CFB), Pacific Forest Research Centre, Victoria, British Columbia (DAVFP), Herbarium, New York State Museum, Albany, New York (NYS), Cryptogamic Herbarium, Department of Botany, University of Toronto, Ontario (TRTC), and Department of Plant Pathology, Washington State University, Pullman (WSP).

Literature Cited

- Connors, I. L. 1967. An annotated index of plant diseases in Canada. Canada Agriculture (Ottawa) Publication 1251. 381 pp.
- Cooke, W. B. 1955. Some fungi from Alaska. Northwest Science 29: 127-138.
- Eriksson, J., and L. Ryvarden. 1973. The Corticiaceae of North Europe. Fungiflora, Oslo. Volume 2. pp. 60-261.
- Ginns, J. 1976. *Merulius*: s.s. and s.l., taxonomic disposition and identification of species. Canadian Journal of Botany 54: 100-167.
- Lemke, P. A. 1964. The genus *Aleurodiscus* (sensu stricto) in North America. Canadian Journal of Botany 42: 213-282.
- Lloyd, C. G. 1920. Arrangement of *Aleurodiscus* of our museum. Lloyd's Mycological Writings 6 (Mycological Note 62): 926-930.
- Martin, K. L. and R. L. Gilbertson. 1977. Synopsis of wood-rotting fungi on spruce in North America. Mycotaxon 6: 43-77.
- Munsell, A. H. 1942. Munsell Book of Color, Munsell Color Co., Baltimore, Maryland.
- Parmasto, E. 1963. [On the fungus flora of Kamchatka.] In [Investigations on the natural history of the Soviet Far East.] Edited by E. Parmasto. Academy of Science, Estonian SSR (Tallinn) Publication 450. pp. 221-289.
- Patouillard, N. 1924. Quelques champignons du Tonkin. Bull. Soc. Mycol. France 40: 29-37.
- Rogers, D. P. and H. S. Jackson. 1943. Notes on the synonymy of some North American Thelephoraceae and other resupinates. Farlowia 1: 263-328.
- Singer, R. 1975. The Agaricales in modern taxonomy. 3rd edition. Cramer, Vaduz. 912 pp.

Received 1 May 1981

Accepted 18 November 1981